

Notice of Allowability

Application No.

09/997,190

Examiner

Dah-Wei D. Yuan

Applicant(s)

BLUNK ET AL.

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 4/14/04.
2. ☒ The allowed claim(s) is/are 2-4, 6-11, 13, 14 and 33-35.
3. ☒ The drawings filed on 20 November 2001 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

LOW CONTACT RESISTANCE PEM FUEL CELL

Examiner: Yuan S.N. 09/997,190 Art Unit: 1745 May 7, 2004

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on April 14, 2004 has been entered. Claims 16,17 were cancelled. Claims 33-35 were added.

2. The text of those sections of Title 35, U.S.C. code not included in this action can be found in the prior Office Action issued on January 16, 2004.

Examiner's Amendment

3. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

4. Authorization for this examiner's amendment was given in a telephone interview with Mr. Gary Brooks on May 7, 2004. The application has been amended as follows:

Cancel claims 1,19-30,32.

Claim Rejections

5. The claim rejections under 35 U.S.C. 103(a) as obvious over Cisar et al. and Braun et al. on claims 1-4,6,11,16,17,32 are withdrawn because the independent claim 1 has been canceled. The claim rejections under 35 U.S.C. 103(a) as obvious over Cisar et al. and Bisaria et al. on claims 1-4,6-8,11,16,17,32 have been withdrawn because the independent claims 1 has been canceled.

Reasons for Allowance

6. Claims 2-4,6-11,13,14,33-35 are allowed. The invention of independent claim 33 recites a proton exchange membrane fuel cell comprising a pair of opposite polarity electrode, a porous, electrically conductive media and a current collector comprising a metal substrate supporting a composite having a first conductivity and comprising corrosion-proof, electrically conductive filler dispersed throughout an oxidation-resistant, water-insoluble polymeric matrix. The composite further has an oxidation-resistant and acid-resistant hyperconductive surface layer, whereas the hyperconductive surface layer having a second conductivity greater than the first conductivity and serving to shunt electrical current passing through the media into the surface layer. The closest prior arts of record, Cisar et al., Braun et al. and Bisaria et al., do not teach the use of said polymer composite supported on a metal substrate as a current collector for a proton exchange membrane fuel cell. The invention of independent claim 34 recites a proton exchange membrane fuel cell comprising a pair of opposite polarity electrode, a porous, electrically conductive media and a current collector comprising a composite having a first conductivity and

comprising corrosion-proof, electrically conductive filler dispersed throughout an oxidation-resistant, water-insoluble polymeric matrix. The composite further has an oxidation-resistant and acid-resistant hyperconductive surface layer, whereas the hyperconductive surface layer comprises a plurality of oxidation-resistant and acid-resistant, electrically-conductive particles adhering to a surface of the composite and having a second conductivity greater than the first conductivity to shunt electrical current passing through the media into the surface layer. The closest prior arts of record, Cisar et al., Braun et al. and Bisaria et al., do not teach or suggest the hyperconductive surface layer comprising a plurality of said particles to a surface confronting the media in a proton exchange membrane fuel cell. The invention of independent claim 35 recites a proton exchange membrane fuel cell comprising a pair of opposite polarity electrode, a porous, electrically conductive media and a current collector comprising a composite having a first conductivity and comprising corrosion-proof, electrically conductive filler dispersed throughout an oxidation-resistant, water-insoluble polymeric matrix. The composite further has an oxidation-resistant and acid-resistant hyperconductive surface layer, whereas the hyperconductive surface layer comprises a continuous, oxidation-resistant and acid-resistant film on the surface of the composite confronting the media and having a second conductivity greater than the first conductivity to shunt electrical current passing through the media into the surface layer. The closest prior arts of record, Cisar et al., Braun et al. and Bisaria et al., do not teach or suggest the hyperconductive surface layer comprising an additional continuous, oxidation-resistant and acid-resistant film on the surface of the composite confronting the media in a proton exchange membrane fuel cell.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dah-Wei D. Yuan whose telephone number is (571) 272-1295. The examiner can normally be reached on Monday-Friday (8:00-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan, can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Dah-Wei D. Yuan
May 10, 2004

A handwritten signature in black ink, appearing to read 'Dahwei Yuan', with a long horizontal flourish extending to the right.